EXTENDED ABSTRACT

Ground *vs* trellis in rootstock cane production fields

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ABSTRACT

Context and purpose of the study – The vine nursery sector is undergoing a transformation to meet growing environmental and sanitary demands. Several studies have highlighted the contamination risks associated with the agronomic management of rootstock cane production fields, since rootstock canes frequently show higher levels of pathogenic fungi than scion material.

A major factor that can contribute to contamination is the cultivation method of rootstocks, which in Spain and other dry climate countries traditionally involves growing plants without any trellis or supporting structure. This method requires annual pruning of head stocks close to the old wood and leaving the canes developing directly on the ground. Such practices are problematic, as aggressive pruning wounds provide entry points for pathogens, while having the vegetation at ground level promotes a humid microclimate that can facilitate the proliferation of fungal species. Moreover, from the management point of view, this cultivation method hinders the use of terrestrial vehicles for antifungal treatments, as traffic is impeded by canes growing in the inter-rows.

In wetter climates, nurseries have adopted alternative cultivation methods, transitioning from flat ground systems to vertical or horizontal trellis systems. These trellised systems aim to minimize soil-surface pathogen contamination while enhancing the quality of rootstock material. Some research suggests that these systems may yield larger quantities of good quality straight cuttings than from vines allowed to spread along the ground, though there is a lack of research in dry environments. This study aims to assess the agronomic performance and viability of three vertical trellis systems on cane production fields of 140 Ruggeri and 110 Richter rootstocks.

Material and methods – Three vertical trellis systems; elevated crown, alternate crown, and vertical axis, were implemented in two rootstock mother fields (110 Richter and 140 Ruggeri) in a commercial rootstock mother vineyard owned and managed by the Vitis Navarra nursery in Soria, Spain (41°41’31”N - 3°15’36”W, elevation: 965 m). The pruning weight was measured during the first consecutive seasons of trellis formation (2023-2024). And, a two-way analysis of variance (ANOVA; $P < 0.05$) was used to evaluate the effects of the factors (trellis system and rootstock) and their interactions on the variable measured, when the F value was significant ($P \leq 0.05$), a Tukey’s honest significance difference (HSD) test was executed.

Results – The trellis system did not affect cane production in terms of pruning weight, though there was a consistent trend in both rootstocks, the elevated crown system showing slightly higher pruning weights, followed by the alternate crown and vertical axis systems. These results are subject to validation in the following seasons and to be analysed from an operational point of view in order to determine the suitability of each system for its implementation at the nursery level.